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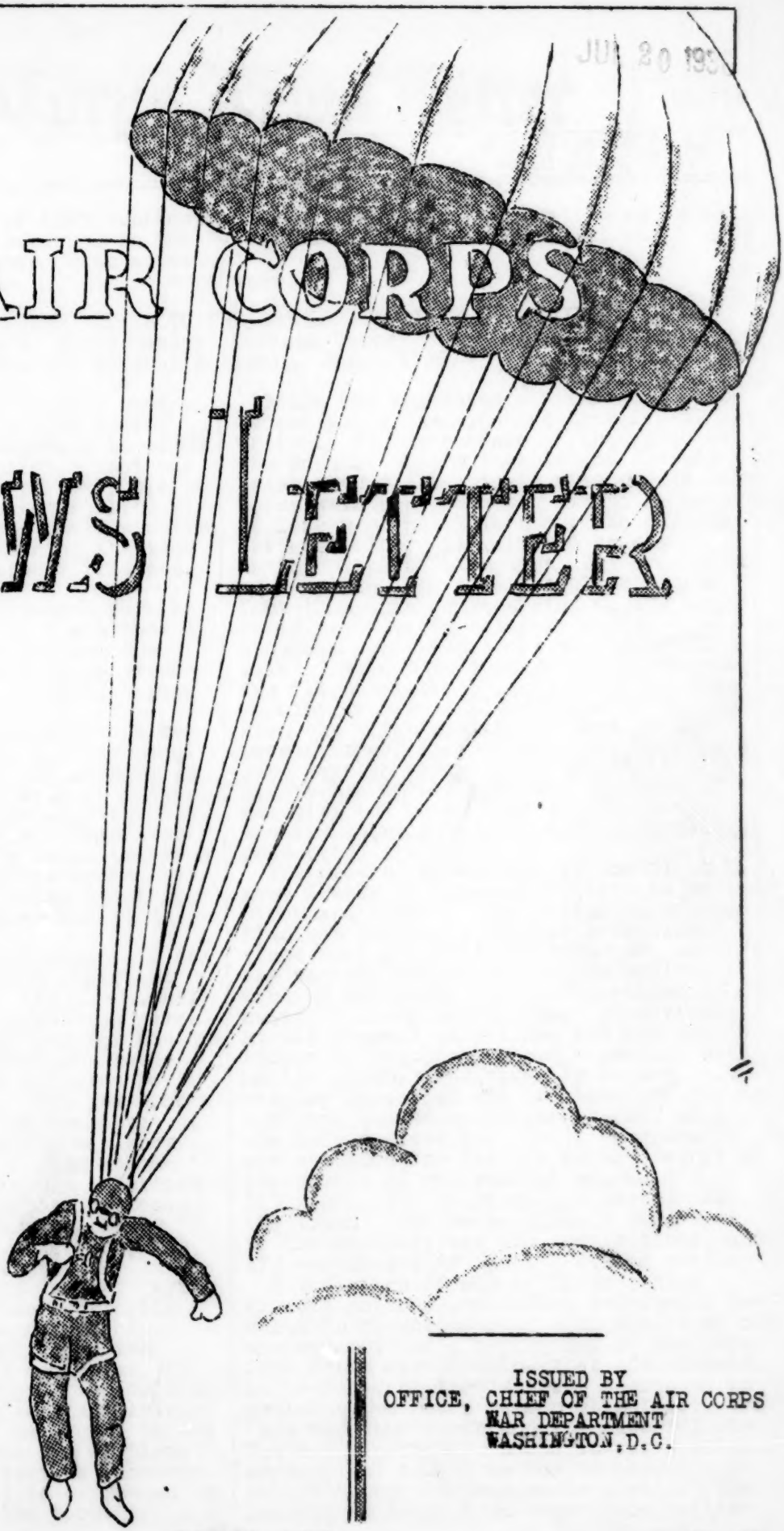

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VOL. XIX **Air Corps News Letter** NO..14

Information Division Air Corps — July 15, 1936 — Munitions Building Washington, D.C.

The chief purpose of this publication is to distribute information on aeronautics to the flying personnel in the Regular Army, Reserve Corps, National Guard, and others connected with aviation.

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THE MEDICAL CONTRIBUTION TO THE DEVELOPMENT OF BLIND FLYING

By David A. Myers, Major, Medical Corps, U.S. Army.
From the Medical Bulletin, July, 1936.

Many aviators and most laymen have no proper conception of the term "Blind Flying." To the vast majority it simply means flying when the pilot cannot see things clearly. To the properly trained aviator, the ability to do Blind Flying and to understand the basic underlying human reactions governing the same means the difference between life and death.

The pioneer medical research work accomplished during 1926 by the author of this article firmly established the basic principles from the human standpoint on which the art of Blind Flying is founded.

Many lectures and demonstrations before civic bodies, clubs and technical societies were given by the author. In all of the articles published and the lectures and demonstrations given, the basic principles discovered were freely discussed and explained, resulting in a more or less general understanding by the public of the underlying physiological reactions experienced in Blind Flying.

In all the articles published and demonstrations given, a most efficient and tireless co-worker, Lieut.-Colonel William C. Ocker, Air Corps, was given equal credit with the author for his development of the technical apparatus used, and supplying the stimulus for the research by being courageous enough to declare that "aviators could not do Blind Flying." Why, he did not know.

Blind Flying is that flying accomplished in which any visible reference to the earth for the purpose of recognition of position is impossible by reason of fog, storms, dust, complete darkness, thick clouds, etc.

Simulated Blind Flying is that flying in which visual reference to gravity for the purpose of recognition of spatial position is limited to the pilot's cockpit and its equipment, by means of proper coverage of the cockpit. Simulated Blind Flying is that flying accomplished by visual reference to the instruments installed in the airplane. Therefore, the proper term is "Instrument Flying," or, as it is expressed by airmen, "Flying under the Hood."

Since the beginning of time and until recent years, mankind has traveled almost entirely on the surface of the earth or the oceans. Man's invasion of the air began when small animals attached to balloons were sent into the air to ascertain if life were possible above the earth's surface. They all returned safely to earth, with the exception that one suffered a broken leg, thus establishing the fact that this contemplated flying era would produce its category of ills and problems for the doctors to treat and solve. From this time to the epoch-making flight of the Wrights at Kitty Hawk, mankind continued his efforts to fly. From the Wrights at Kitty Hawk to the present space annihilating airplane is a long ways in terms of transportation. It has been a much longer way in terms of adapting the human body to the changes and the solution of the medical problems presented.

The present generation is the first to move freely in three dimensions as do the birds and fishes. The evolution of mankind has reached a more or less fixed stage when aviation was born and, as flying was not concerned in this evolution, mankind developed into an "earthbound" entity. Every human being, in arriving at his present state, has had one common factor in his development - contact with mother earth. Individually we are ... nothing more than the sum total of our experience stored up in our brains, plus the body we live in. These experiences are obtained for storage as the result of the action of our special senses: (1) sight, (2) hearing, (3) taste, and (5) touch. Two more, vitally important to the aviator, are (6) muscle sense, and (7) vestibular or Kinetic-static sense.

Stimulation of any of these senses arouses action, and action eventually results in consciousness, a knowledge of our environment and a perception of the physical facts constituting that environment. It is apparent that all our stored up experience has had a common stimulator, contact with the earth and its material objects. Experience, based on our special senses, has taught us how to adjust ourselves to our various environments. The lessons we learn from experience are in-

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delibly impressed on our consciousness. One of the earliest lessons learned is how to maintain our equilibirum. Undoubtedly equilibrium is a bodily function maintained by the action of all of the special senses. Some of these senses enter very little into this maintenance; taste, smell and hearing have little, if any, effect; tactile sense or touch, used in connection with muscle sense, has a little more effect. Chiefly, if not entirely, we maintain our equilibrium by means of a coordinated cooperation of (1) sight, (2) muscle sense, and (3) vestibular sense. By the use of this "trinity sense" we are able to maintain and realize position, rate and direction of motion, and generally orient ourselves in relation to the earth.

Man's equilibrium on the ground consists of the ability to maintain his body in any position it is possible or desirable to put it. Man's equilibrium in the air consists of the ability to maintain an airplane, which he has become a part of, in any position it is possible or desirable to put it, plus the added factor that all contact with the earth is entirely lost except for two things: (1) sight, and (2) the column of air the plane is flying in. Human sensations, reactions and consciousness having developed after countless years of contact with the earth, it is not possible for man to invade the air and safely function using the prior experiences stored up in his brain by a set of special senses evoluted in contact with the earth.

Stabilized equilibrium, either in the air or on the ground, is maintained only when each of the trinity of senses- (1) sight, (2) muscle sense, and (3) vestibular sense - function correctly, and their stimulations are correctly interpreted by the brain. Some equilibrium and orientation may be present with all three imperfectly acting. Adjustment to environment will take place if two remain unimpaired. The combinations of impairment, function, and adjustment are many. All compensatory equilibrium or adjustment to environment, however, has been developed on the ground, and in taking to the air we separate ourselves from the universal common factor, earth contact, and attempt to function with a set of senses and stored up experience developed for earthbound use only.

Since time began, human beings have been receiving sensations in their brains and storing them away for future use and guidance when the same situation again arises. In the process of storing away these sensations the brain has accomplished many seemingly weird things. The image of objects on the retina is upside down; yet the brain properly interprets, and we actually see right side up. That portion of our equilibrium sense having its origin in the vestibular apparatus is stimulated into action by body motion. This may be accomplished by motion of the body itself or motion of any object with which the body is in contact. This moving body need not be in contact with the earth to have this sense stimulated into action. We walk, run, ride a merry-go-round, ride in an airplane, and by use of our equilibrium sense are able to maintain any possible or desirable position. Although the three senses -(1) sight, (2) muscle sense, and (3) vestibular sense - are bound into one combination sense (the equilibrium triplets), each of them may be brought into separate action, and send its messages to the brain. We can "muscle sense" our position without sight. We can "sight" our position without the aid of the others. Acting alone, the "vestibular sense" will give the brain information regarding motion, rate of motion and direction of motion.

Sight is the reliable one of the "triplets." "Muscle sense" is an alert, variable acting "triplet". The bad actor of the three is the vestibular sense. This sense, constantly alert, delicately sensitive, and easily stimulated into action, must be continually checked up on and kept under control by the other two of the combination if proper and continuous equilibrium is maintained. If the body, on the ground or the body and an airplane in the air be turned, as in a spin, all three of these senses, acting in coordination, will give reliable information regarding body motion and position both on the ground and in space. Ground equilibrium and spatial orientation will be complete.

Sight is the same in the air as on the ground. Muscle sense (the so-called seat sense of the airman) cannot be as good in the air as on the ground, having been developed by years of contact with the earth and its material objects. Automatically, on taking to the air, one is robbed of a great portion of their muscle sense. All airmen have developed "seat sense" - some to a high degree, and most of them have that essential thing, "the feel of the ship." No false impressions are received from (1) sight and (2) muscle sense. They may be much lessened in case of lack of proper vision or poorly developed muscle sense. Their messages to the brain, whether jointly or separately, are reliable. This is not true of the messages received from the vestibular sense. If your body is rotated in any dimension of space, certain definite and fixed messages will be sent to the brain by the vestibular sense acting in coordination with sight and muscle sense. Provided this body motion is not so violent or long continued as to produce loss of perception, your brain will receive reliable information from this trinity of senses and you will

maintain your equilibrium and know accurately at all times what position your body occupies with relation to the earth's surface and what direction, if any, it is moving. If, during this rotation, your body is stopped or retarded, you will have a momentary sensation of giddiness, but you will immediately, by the use of your sight, adjust yourself to the earth (gravity) and maintain your equilibrium.

Whenever the human body is rotated in any dimension of space, with the eyes closed, thus removing vision from the trinity of (1) sight, (2) muscle sense, (3) vestibular sense, and this rotation is (a) retarded, (b) stopped, (c) reversed, or (d) continued until rotating body motion is coincident with the motion of the fluid in the vestibular (semi-circular) canals, just as definite and fixed messages will be sent to your brain as if the eyes were open and vision intact, but each and every one of these messages will be false. You will be able to correctly interpret the original starting motion only. You will recall that the vestibular apparatus is primarily composed of three tiny sets of fluid filled canals placed at right angles to each other in the labyrinth, in the sagittal, coronal and horizontal planes; thus providing motion sensing in any dimension of space.

Let us now conduct a practical experiment in order to visualize what happens when your vision is absent and your body is rotated. Any smooth running revolving mechanism will do. A barber chair is ideal. Flight surgeons use the Jones-Barany chair. In such a mechanism only right or left rotation is possible; therefore, only the action of the horizontal motion sensing vestibular canals can be demonstrated in this chair. In an orientator any of the spatial positions may be assumed, and the corresponding canals tested. The results are the same in any case. If there is such a thing as acquiring immunity, the horizontal canals, being the ones in constant daily use, should be less sensitive than the others. It was found that there was no difference, and that constant use did not affect the sensitivity. With the eyes covered, rotation at any average speed is started. You will immediately and correctly interpret right or left rotation. Having always experienced this same sensation during prior experience of body motion to the right or left, you will be positive as to what is happening. The number of rotations should be limited in order that too violent reactions will not be produced. If on the sixth to eighth rotation the motion of the chair is now retarded to a slow speed, you will have an immediate sensation of turning in the opposite direction, and a message will be sent your brain to that effect by the vestibular apparatus, which is now acting without its "control co-ordinator," your sight. You will be positive your body is now turning in the opposite direction of prior motion. If the rotating chair is now stopped, the sensation of opposite turning will be much intensified. This sensation of opposite turning will last from five seconds to as high as 25 seconds in some individuals. The average is about 23 seconds. This average was established after examining hundreds in the Jones-Barany revolving chair during the research conducted. Every human being has his own individual threshold of vestibular stimulation and reaction.

If the rotation of the body is continued (usually 8 to 10 turns), until the motion of the body and the motion of the fluid in the semi-circular canal being stimulated is the same speed, you will apparently put the vestibular sense out of action, and your brain will receive an immediate message that all motion has ceased and you are sitting still.

Repeated reversal of rotation, without stopping, creates an utter confusion of motion sensing. What hashappened? Vertigo (to turn or turning) has been produced. Vertigo consists of two things:

(a) a sensation of turning in the opposite direction to prior motion, and

(b) a sensation of falling in the same direction as prior motion.

Vertigo is medically defined as: "The subjective sensation of a disturbed relationship in space."

You will now realize that the pioneer aviator dependent on messages sent to his brain by his vestibular sense, acting without the "control co-ordinator, vertigo stopper," sense of sight was in a dangerour predicament.

The above is exactly what happens in Blind Flying. All visual reference to the earth, or any object the prior position of which in relation to the earth's surface is part of your consciousness is absent, and only muscle sense and vestibular sense remain. As a matter of fact, a real blind man would function better in this predicament, because after all there is no difference in not being able to see anything and not being able to see, except that the real blind would have usually developed compensatory equilibrium to a high degree.

All of the published literature and the research work accomplished prior to the original research conducted by Lieut. Col. Ocker and the author during 1926-1928 concentrated on one idea: the finding of a way of producing immunity against vertigo by means of placing pilots in a freely movable, revolving apparatus, and turning their bodies through the various spatial positions in the belief that constant repetition of motion would establish an immunity. Every old-time pilot has had"a ride" in the Jones-Barany chair, and most

of them have spent hours in some type of revolving orientators. Nothing came of all this, except to establish the fact that pilots who could expertly handle an orientator were possessed of a high degree of muscle sense and a keen sense of perception. No immunity was obtained against the reactions experienced in that deadly enemy of the airman - the spin. No immunity was possible from a physiological or a technical standpoint, because no research or experiment conducted had arrived at a solution of the problems involved.

Prior to the original research conducted by the author into the physiological aspects of Blind Flying, there was no scientific basis established on which to build instructions to airmen in the practical application of these perfectly normal physiological reactions experienced when doing Blind Flying.

Vertigo is one of the oldest symptoms found in medical literature, and when clinically present is believed to have a pathological basis. No prior study of vertigo as a purely physiological entity, to establish it as a causative factor in the behavior of human beings in their adjustments to their environment, has been found in the medical literature, and none is believed to exist. The author desires to go on record as believing that induced physiological vertigo (that is, vertigo without pathological basis) may be a common causative factor in human behavior in vocations other than flying. The automobile, swiftly and freely movable in any horizontal plane, subjects the occupants to many of the factors that tend to produce "Induced Vertigo."

All vertigo reactions follow certain definite and fixed lines, and all humans are subject to the same reactions, varying only in intensity. A human being in which these reactions are absent or distorted is abnormal and has either met with a physical disaster or was born without proper functioning sense apparatus. In such cases some of the normal acting senses must compensate for this lack in order that the individual may avert disaster and simulate normal control in following the ordinary routine of life.

Continued in next issue.

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NEW AIRPLANES FOR 17TH ATTACK GROUP

The 34th Attack Squadron, March Field, Calif., has been equipped with six Northrop A-17's, the 73rd with three and the 17th Group Headquarters with two. They are in the air continually, as pilots of the 17th are anxious to try their hand with a new type of plane. The Boeing P-12 Pursuit plane has been used since the institution of the GHQ Air Force in March, 1935.

ILLUMINATING TARGETS FOR NIGHT BOMBING

Bombardment planes nowadays must be prepared to bomb objectives at night as well as during the bright sunshine of the day. Illumination of targets for night bombing has been given a great deal of study by the First Wing at March Field, Calif., through its Ordnance Officer, Captain Philip Schwartz, Ordnance Department.

Skies above Muroc Dry Lake, the site of the First Wing's Bombardment and Gunnery Range, were illuminated the night of June 25th by flares having a million candle power each. Using the light from this source, pilots of the 11th Bombardment Squadron from Hamilton Field and the 30th Bombardment Squadron from March Field dropped imaginary bombs from their Martin B-10 Bombardment planes. All of the flares used were dropped by a Douglas Observation plane from the 88th Observation Squadron, Hamilton Field.

Dropping the flares called for considerable skill on the part of the pilot from the 88th. The light had to be placed in the proper position in respect to the target. This was done in order that the bombardiers, looking through the bomb sight telescope, could sight satisfactorily.

The flares used weighed forty pounds and were equipped with time fuses in order that they might be lit at any desired time after leaving the plane. Burning for two minutes, the flares were composed of barium nitrate and aluminum powder with castor oil as a binder.

At the conclusion of the mock bombing, the planes of the 11th Bombardment Squadron returned to Hamilton Field, while the planes from March Field returned to that station.

High ranking officers who watched the demonstration were Colonels Henry B. Clagett, Wing Commander, and John H. Pirie, commander of the 17th Attack Group; Lieut. Colonel Howard C. Davidson, commanding the 19th Bombardment Group, and several other unit commanders.

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CRUISING RANGE OF NEW ATTACK PLANE

Illustrating the greatly increased cruising range now possible with the new Northrop Attack plane, Lieut. Charles B. Overacker, of the 17th Attack Group Staff, flew a round trip from March Field to Hamilton Field in 5 hours, 35 minutes, without landing. This involved a total of over 814 miles. In other words, a squadron, flying formation, using this type of Attack plane, could leave March Field right after breakfast, attack the Infantry garrison in the Presidio of San Francisco, over 400 miles away to the north, and return to March Field in time for a late lunch. This demonstration by Lieut. Overacker attracted favorable attention.

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FIVE-DAY WAR AT FORT SILL, OKLA.

The Field Artillery School closed its course this year on June 27th, terminating the year's training with a five-day simulated war, during which time the officers in training were busy demonstrating their ability or lack thereof, as augmented by the school course.

The Air Corps took a major hand in the war games, the usual services of Flight "E" and the 1st Balloon Squadron being enlarged upon with the assistance of three A-17 Attack planes from Barksdale Field, La., and three O-43 Observation planes from Brooks Field, Texas.

The airplanes and balloon were on the go early and late. The 1st Balloon Squadron accompanied the Blue Army into the field in full field service kit, while the planes operated from the hangars as usual.

Photographic and visual reconnaissance, accompanied by radio communication, helped to ascertain targets for the Attack planes, which ably "strafed" and laid smoke screens for the further education of the student officers in general. The war went on and off smoothly, only minor failures of equipment being experienced.

According to the News Letter Correspondent, the war demonstrated the fact that high altitude observation can find targets for the Attack and Bombardment, and direct their attack thereon; further, that the Artillery must improve its camouflage for combat maneuvers. The motorized units had considerable difficulty regarding full concealment of vehicles because of sun reflection from nickled or polished surfaces and from glares of tail and stop-lights at night.

In addition to the personnel at Fort Sill, Lieuts. Bunker, Wise and Livingstone from Barksdale Field, and Lieuts. Coates, Dolan, Macrum, Stewart and Hillsinger from Brooks Field, were commended for their excellent cooperation in this general field exercise.

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THE NEW CLASS AT ADVANCED FLYING SCHOOL

The present class at the Advanced Flying School, Kelly Field, Texas, reported in for duty on June 20th and began ground school on June 25th. This continued for one week, and flying began on July 1st. The class consists of 34 Regular Army officers, 2 foreign officers and 38 Flying Cadets. They are assigned to sections, as follows: Attack, 6 officers and 10 Cadets; Pursuit, 6 officers, 10 Cadets and one Mexican officer; Bombardment, 14 officers and 16 Cadets; Observation, 8 officers, 7 Cadets, and one officer from the Philippine Constabulary.

CHANGE IN COMMANDERS AT KELLY FIELD

Outstanding events at the Advanced Flying School, Kelly Field, Texas, in the last few weeks were the departure of Colonel Jacob E. Fickel and the arrival on the post of his successor as commanding officer, Lieut. Colonel Arnold N. Krogstad. Originally slated to go to the Panama Canal Zone, Colonel Fickel's orders were changed, sending him to Corps Area duty at the 9th Corps Area.

Colonel Krogstad was officially greeted by the staff of Kelly Field and prominent citizens of San Antonio at a luncheon given at the Kelly Field Officers' Mess on July 2nd. At this luncheon were all the members of the staff and faculty of the field, the guests of honor being the commanding officers of neighboring fields and the Air Corps Training Center, viz: General J.E. Chaney, Air Corps Training Center; Colonel J.H. Howard, Duncan Field; Colonel H.W. Harms, Randolph Field; Colonel H.J.F. Miller, Brooks Field; Major Pursley, Air Officer of the 8th Corps Area; and Major Thompson, commanding officer of the Normoyle Depot, where some of the Kelly Field personnel are quartered. The civilians in attendance, representing the Military Affairs Committee of the San Antonio Chamber of Commerce, were headed by Mr. L.B. Clegg, who for the past eight or ten years has been chairman of that Committee. Accompanying Mr. Clegg were Colonel Tuttle, Engineer Reserve, head of the Public Service Company of San Antonio; Mr. I. Kampmann and Mr. William M. McIntosh, publisher of the San Antonio LIGHT.

Mr. Chamberlain, the oldest living president of the San Antonio Chamber of Commerce, was present at the luncheon as guest of honor.

The speakers at the luncheon were Col. Peyton, as representative of the Corps Area Commander; Messrs. Clegg and McIntosh. Colonel Peyton, who welcomed Colonel Krogstad to this Corps Area, referred most cordially to the relations existing between the Air Corps units of San Antonio and the ground forces stationed thereat. Mr. Clegg, as a pioneer of Texas, welcomed Colonel Krogstad to San Antonio and its facilities. Mr. McIntosh, as representative of the press, voiced his natural appreciation of the Colonel's arrival and welcomed him, offering him all the cooperation afforded by the press of San Antonio.

Major Wolcott P. Hayes conducted the luncheon as master of ceremonies.

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Lieut. R.C. Rhudy was the first Kelly Field pilot to take advantage of the new extension on cross-country radius from that field. His flight in a Pursuit ship took him to Gainesville, Fla., and return on perfect schedule.

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JUNE A BUSY MONTH AT BOLLING FIELD

The usual last minute rush was encountered at Bolling Field, D.C., during the month of June as officers completed the various missions required before the end of the fiscal year. All available planes were kept busy during the day and, although two nights each week were designated for night flying, it was found necessary to fly every night toward the end of the month in order that pilots stationed at the War Department and Office, Chief of the Air Corps, might complete the training requirements of War Department Circular #69.

As a precautionary measure, and in order to facilitate operations, a control tower 15 feet high, with an 8-foot platform, was constructed directly in front of the Operations Office. This tower is equipped with a radio remote control system, a Signal Corps directional wind indicator, office telephone and an airways control light for controlling air traffic. It is ideally located for night flying, as it gives the operators in charge an unobstructed view in all directions. With the rapidly increasing day-time traffic during the summer, it is probable that a system of air traffic control will be devised, in which case the tower will be a ready means for overcoming any unforeseen congection.

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FAST WORK ON MAPPING PROJECT

The practical peace time value of an Air Corps photographic section was recently demonstrated by the 23rd Photographic Section, March Field, Calif., when it mapped 171 square miles of territory in the State of Idaho in forty minutes actual photographic time.

The detail from March Field, Lieut. Kenneth B. Hobson, pilot, and Technical Sergeant William M. Brees, photographer, consumed one day in flying to the Idaho rendezvous with the Corps of Engineers, flying via Las Vegas to Pocatello. There they met representatives of the Northwest Division of Army engineers. It was explained that the territory to be mapped was on the upper Snake River in the vicinity of Rigby, Idaho, 15 miles north of Idaho Falls.

A Fairchild T3A camera was used for this work. The camera took five pictures with one tripping of the shutter from five different angles. When these prints are restituted to the equivalent of five pictures taken from the vertical, an immense area is available for the topographer to work on.

Lieut. Hobson and Sergeant Brees returned to their home station on the same day their photographic work was accomplished.

MASTER SERGEANT H.J. BERTRAM RETIRES

War Department orders directed the retirement from active service on June 30th of Master Sergeant Herbert J. Bertram, 9th Airship Squadron, Scott Field, Ill.

A native of Chicago, Sergeant Bertram originally enlisted in the Signal Corps branch of the Army in 1907 at Columbus Barracks, Ohio, and completed thirty years of active service with the colors in June, 1936. During his first enlistment he was sent to Cuba for service in that island during its reconstruction days, and since then he has been stationed at many garrisons in the tropics and on the United States mainland.

On his return from Cuba, Sergeant Bertram spent the next several years on duty in New York harbor, having been stationed at the garrison on Bedloe's Island, which is the home of the Statue of Liberty. His service next found him in Asia, stationed in the Philippines and assigned to duty on deep sea cable ships engaged in laying and maintaining telegraph cables in the Pacific Ocean and the China Sea.

At the beginning of the War in 1917, Sergeant Bertram found himself assigned to the production of hydrogen gas for the Aviation Section of the Army. Ordered to Omaha, Nebraska, he was held there for the duration of the War. When all Army lighter-than-air activities were centralized at Scott Field in 1922, Sergeant Bertram was transferred to that post and has been stationed thereat ever since, save for short periods of detached service at the Army's gas production plants in Virginia, Texas and elsewhere.

Sergeant Bertram has been in active charge of the hydrogen and helium plant at Scott Field since his arrival there. A bronze plaque crediting him with the supervision and construction of the gas plant was installed at the direction of Colonel John A. Paegelow, former commandant of Scott Field. Since 1924, Sergeant Bertram has been with the 9th Airship Squadron.

On July 3rd the 9th Airship Squadron was scheduled to assemble to give him a testimonial dinner in the squadron barracks. The men of the Squadron purchased a suitable retirement gift to be presented him on that occasion by Major Neal Creighton, the squadron commander.

Sergeant Bertram has selected the vicinity of Scott Field as his future home and purchased a home near O'Fallon, Ill., where he and his wife are now living. For five years from July 5, 1928, he held a commission as Captain, Specialist Reserve.

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Brigadier General Delos C. Emmons, Air Corps, relieved from assignment with the 18th Composite Wing, Hawaiian Department, is to proceed to March Field, Calif., and assume command of the 1st Wing, GHQ A.F.

APPLAUSE FOR MAJOR HASTEY

Writing under date of June 10th, the News Letter Correspondent from Nichols Field, Rizal, P.I., states that on the eve of the departure for the United States on the July transport of Major Thomas W. Hastey, the personnel of Nichols Field expressly wish to record their chorus of applause for their Post Commander for the many and varied improvements affecting them made at that field under his administration.

"We do not want to concern ourselves in this article with all encompassing improvement projects undertaken and completed on the landing field, or of alterations to hangars, or of any such work of a strictly military nature," says the Correspondent. "We include in that classification the large irrigation ditch, a work of respectable proportions, dug to provide adequate drainage accommodations for the landing field, as well as those new garages with their conveniences, built to house the motor vehicles of the 66th Service Squadron. The new oil storage warehouse, the salvage warehouse, etc., unquestionably fall in the above classification.

It would seem that we, of Nichols Field, take the landscape gardening a bit too much for granted. The miles of seemingly always newly manicured shrubbery that hedges all our post roads; the close-cropped perpetually green lawns that carpet all approaches to every post building; the many flower plants that are never without that 'Flower Show' groomed appearance, all contribute to that opulent feeling of living in an exclusive residential district.

The majority of us here have seen the Post Theater as it was; a dingy theater, poorly equipped with inferior projection machines that were harnessed with a whispering sound apparatus that stole on the ear, and set up with rows of back-bone uncoupling shelving that served for seats for the unmarried enlisted personnel, transformed into the new Post Theater as it now stands; a modern little cine boasting of an excellent screen, faultless projection and sound reproduction, and an arrangement of decidedly improved seats.

Golfers on the post were unanimous in their well founded contention that the firing range bordering on their post course constituted a much too real human hazard during range practice. To remedy this situation, the target butts were torn down and rebuilt on the bombing range. The net result was a far superior pistol range in a safer location. At the same time, the removal of the old butts allowed for the expansion of the golfers' hunting grounds to the gratification of those who chase the little white ball round and round.

Partitions were being torn down and concrete broken up last week as preliminaries for the altogether new interior to be given the Post Signal and Radio building. A bright new and shiny two-position telephone switchboard (that ought to mean the best of 'hello' service for the post) stood ready for installation in its new home in the building. When post radio operators complained of third party interference by high power transmission lines near the building, linemen were called in and new poles were installed on a new route to take care of the lines out of harm's way.

Next door, the Sixth Photo personnel in their freshly redecorated offices and workshop, that might well serve as a model for any photo building in the military or commercial field, now have for their work every conceivable electrical wiring convenience. It would be 'house ideal' for the housewife forever wanting a new electric outlet for her gadgets.

Probably all of us walk in and out of the Post Exchange more frequently than in any other building on the post. Our PX is still undergoing a length and breadth overhauling that is resulting in a store as modern as any PX on any post.

Even the Guardhouse came in for its share of refinement. Extensive alterations were performed on its interior that increased its capacity and rectified poor ventilation and other unsatisfactory conditions.

A successful operation on our post water piping system cured our shower heads of their pressureless teasing trickle and gave us throughout the post needle point pressure.

And so we could go on enumerating a host of other improvements, even as extensive as a road straightening project that diverted the traffic from the front of our hangars, where it constituted a menace to safety, to the rear of them, but we won't, for it would merely tempt us to mention another and still another.

We cannot understand why some of our Army slangsters do not become as renowned as such ephemeral immortals as a Gene Buck, or a Bugs Baer, or a Rube Goldberg. We proudly acknowledge this quotation as coming from them, for it does seem to express better that we could hope to the thoughts of Nichols Field:

'We sure hate to think of Major Hastey as a short-timer
already sweating that canoe ride.'"

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Special Orders of the War Department announce the appointment, on June 22, 1936, under the provisions of an act of Congress approved June 16, 1936, of the following-named Captains of the Air Corps to the temporary rank of Major, from June 16, 1936, viz: William Seymour Gravely, James Thomas Curry, Jr., Howard Knox Ramey, and Oakley George Kelly.

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B I O G R A P H I E S

LIEUT. COLONEL DOUGLAS B. NETHERWOOD

One of the veteran pilots in the Army Air Corps, Lieut. Colonel Douglas B. Netherwood was born in Birmingham, Eng., February 4, 1885. Following his graduation in 1908 from the A. & M. College of Texas, with a degree of B.S. in Mechanical Engineering, he enlisted in the Army, serving as Private, Corporal and Sergeant with the 20th Company, Coast Artillery Corps, from July 31, 1908, to August 6, 1911. The following day he was commissioned a second lieutenant in that branch of the service. He was promoted to 1st Lieutenant, July 1, 1916; to Captain, May 15, 1917; to Major, July 1, 1920, and to Lieutenant Colonel, August 1, 1935. During the World War he held temporary rank as Major and Lieut. Colonel.

Detailed to the Aviation Section, Signal Corps, he completed his flying training at the Signal Corps Aviation School at San Diego, Calif., and received the rating of Junior Military Aviator. Three years later, on August 20, 1917, he was rated as Military Aviator.

Prior to the war, Col. Netherwood was on duty with the 1st Company, 2nd Aero Squadron, in the Philippines. Ordered to return to the United States, he was on duty in the Airplane Division, Office of the Chief Signal Officer, from Aug. 7, 1917, to November 10, 1917, and was then transferred to Love Field, Dallas, Texas. He was in command of this field until April 27, 1918. He had also assumed command of the Aviation Repair Depot at Love Field in March, 1918, and he continued in this capacity until March 29, 1921, when he was transferred to the San Antonio Air Depot for duty as Executive Officer.

From June 26, 1921, to February 17, 1922, Col. Netherwood was in command of the Air Depot at Americus, Ga. He was then assigned to duty in New York City with the Organized Reserves of the 2nd Corps Area. In February, 1925, he was assigned as student at the Army Industrial College and, following his graduation on June 30, 1925, pursued a two-year course at the Harvard Graduate School of Business Administration, being awarded the degree of Master in Business Administration.

Assigned to the Office of the Chief of the Air Corps, Washington, D.C., he was on duty in the Executive Office from July 7 to September 14, 1927, and for four years thereafter was Chief of the Finance Division.

From September, 1931, to June, 1932, Col. Netherwood was a student at the Air Corps Tactical School at Maxwell Field, Ala., and upon his graduation was ordered to duty in the Philippines, where he served as Department Air Officer, and later assumed the additional duty of Commanding Officer of Nichols Field and of the 4th Composite Group. Upon his return to the United States, he was on duty in the Plans Division, Office of the Chief of the Air Corps, from December 1, 1934, to July 16, 1935, when he was assigned as student at the Army War College. Following his graduation in June, 1936, he was assigned to his present duty as Assistant Director of the Air Corps Board at Maxwell Field, Ala.

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LIEUT. COLONEL LESLIE MacDILL

Lieut. Colonel Leslie MacDill, Air Corps, now serving a tour of duty as a member of the War Department General Staff, and a graduate of no less than six institutions of learning, was born February 19, 1889, at Monmouth, Ill.

Following his graduation in 1909 from Hanover College with an A.B. degree, and from the University of Indiana in 1911, with an A.M. degree, he was commissioned from civil life as a second lieutenant, Coast Artillery Corps, April 13, 1912. He served with the 6th Company, C.A.C., from May 28 to December 8, 1912, and with the 122nd Company, C.A.C., from December 10, 1912, until his detail in 1914 in the Aviation, Signal Corps. Upon the completion of his flying training at the Signal Corps Aviation School at San Diego, Calif., he was rated a Junior Military Aviator on July 2, 1915, which automatically advanced him to the rank of 1st Lieutenant. He was promoted to Captain, May 15, 1917; to Major, Air Service, July 1, 1920, and to Lieutenant Colonel, Air Corps, August 1, 1935.

Assigned to the 1st Aero Squadron, he served with this organization from July to November, 1915, and with the 1st Company, 2nd Aero Squadron, in the Philippine Department, from January, 1916, to May, 1917.

Upon his return to the United States, Col. MacDill was on temporary duty in the Office of the Chief Signal Officer, Washington, D.C., for a brief period, and was then ordered to duty overseas. From October 11, 1917, to May 16, 1918, he was on duty with Headquarters, Air Service, Lines of Communication, as Materiel Officer, Training Department. He was then assigned to the command of the Aerial Gunnery School at St. Jean de Monts, France, and he was responsible for the organization and building of this school.

Returning to the United States in February, 1919, he was assigned to duty in the Office of the Director of Air Service, Washington, D.C., in the Aerial Coast Defense Section, Operations Division, Training and Operations Group. In addition to this duty, he served as a member of the Advisory Board from July 28, 1920,

to Sept. 26, 1920, when he was assigned to pursue a two-year course of instruction at the Massachusetts Institute of Technology, Cambridge, Mass. He graduated in June, 1922, with the degree of Doctor of Science, following which he was assigned to duty at McCook Field, Dayton, Ohio, as Assistant to the Commanding Officer. On June 18, 1923, he was assigned as Chief Engineer Officer of the Engineering Division, McCook Field, and, save for the period of one year, August, 1924, to July, 1925, when he was a student at the Command and General School at Fort Leavenworth, Kansas, he occupied this position continuously until December, 1929. He assumed the additional duty of Chief of the Procurement Section on September 12, 1927, following the removal of the Engineering Division from McCook Field to the new Wright Field and the changing of its designation to the Materiel Division. During the remainder of his stay at Wright Field, he served as Assistant to the Executive Officer, Materiel Division, and at various times was Acting Executive Officer.

On September 2, 1930, Col. MacDill reported for duty in the Office of the Chief of the Air Corps, and was assigned to the Plans Division. During the course of his duty in Washington, he served on various boards and committees.

Relieved from duty in the Office of the Chief of the Air Corps in the fall of 1933 to attend the Army War College, he graduated from this institution in June, 1934, and from the Naval War College, Newport, R.I., in June of the following year. He was then assigned to his present duty as a member of the War Department General Staff.

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CHANGE IN INSTRUCTORS AT KELLY FIELD

Captain John V. Hart, Air Corps, who recently arrived at Kelly Field, Texas, from the Hawaiian Department, where he was a temporary Major in command of the 72nd Bombardment Squadron, took over the duties of Chief of the Bombardment Section of the Advanced Flying School, relieving Captain Wallace E. Whitson, who is scheduled to leave Kelly Field on July 15th for Maxwell Field, Ala., where he will attend the Air Corps Tactical School.

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The new miniature bombing range at Kelly Field is gradually taking shape. It has now reached the height of the old hangar and has received considerable notice in the San Antonio press on the basis of its being the first permanent structture at Kelly Field since the inception of this field in 1917.

NINETEENTH BOMBARDMENT GROUP CELEBRATES

Swatting soft balls and breasting the surf were the principal activities of 30 officers and 300 enlisted men and their families of the 19th Bombardment Group on Wednesday, June 24th. The 19th, which is stationed at March Field, Calif., took a day off to observe its fourth anniversary at the Doheny Palisades, San Juan Capistrano, Calif.

The enlisted men defeated the officers by the close score of 10 to 9 in the soft ball contest. No record was kept of the amount of fish caught, but it is believed that they were few and far between. Swimming, both in fresh water and in the surf, was available for officers and enlisted men.

The trip was made through beautiful mountain and lake country via the Cleveland National Forest. The officers and men of the Group realized through this trip how very fortunate they were to be stationed in Southern California.

The 19th has been very busy since it observed its third anniversary last year at Coronado. The principal event of the past year was the movement of the entire Group to March Field in October from Rockwell Field, near San Diego. Though the officers and enlisted men lost many pleasant contacts through this movement, they have made many other friends in Riverside, San Bernardino and Los Angeles counties since coming to March Field.

The outstanding accomplishment of the past year was the successful conduct of navigation training. The Douglas YOA-5 Amphibian, assigned to March Field for the first half of 1935, was employed to teach air navigation of ocean missions to the officers of the Group. Several long flights, some over the water, demonstrated the ability of the Army Air Corps to operate off shore as well as inland.

The Group also participated in the San Joaquin Valley maneuvers in November, 1935, being stationed at Delano, Calif. Several planes were loaned to the Seventh Bombardment Group for their Florida exercises.

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MOVIE PRODUCER VISITS MARCH FIELD

Howard Hughes, producer of "Hell's Angels" and holder of many transcontinental air speed records, visited March Field on June 23rd for the purpose of conferring with his friend, Major Albert Hegenberger. He informed the News Letter Correspondent that he planned no speed flights for the immediate future, as the engine on his speed plane had been sent back to the factory for extensive alterations.

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Kelly Field, Texas, is in the throes of reorganization and all leaves were cancelled until a stabilized status quo is accomplished.

THE NEW AIR CORPS ACT

H.R. 11140, an Act to provide more effectively for the national defense by further increasing the effectiveness and efficiency of the Air Corps of the Army of the United States (Public -No. 785 - 74th Congress), approved June 24, 1936, reads as follows:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the authorized strength in airplanes, equipment, and accessories of the Army Air Corps established by the Act approved July 2, 1926 (44 Stat.780), is hereby increased to such numbers as will permit the Secretary of War to complete the equipment and organization and to maintain in the Army Air Corps the special Army air organization known as G.H.Q. Air Force, and our overseas defenses, together with a 25 per centum reserve for such forces, and to procure such other airplanes and equipment, including spare parts, supplies, and accessories, for such other purposes as are necessary to provide for the mission of the Army Air Corps: Provided, That of the increase authorized herein not to exceed two thousand three hundred and twenty serviceable airplanes, including equipment and accessories, are authorized to be obtained."

In the report of the Senate Military Affairs Committee accompanying H.R. 11140, it is stated that "This measure as passed by the House on April 20,1936, provided for increasing the present authorization of 1,800 serviceable airplanes to 4,000. The Committee on Military Affairs took this legislation up further with the War Department, receiving a report under date of May 26,1936. The Department advises that an increase in the present authorization to 4,000 planes is not in accord with the financial program of the President. However, the committee is further advised that if the bill is amended to provide for an increase of the present authorization to 2,320 planes the measure would be in accord with the President's program. The matter of increasing the authorized airplane strength has been under study on several different occasions since the fixing of the present authorization in the Air Corps Act of July 2, 1936. (44 Stat. 780). The so-called Drum Board, the War Department Special Committee on Army Air Corps, known as the Baker Board, and the Federal Aviation Commission, known as the Howell Commission, all concurred in recommending a minimum of 2,320 airplanes for the Army Air Corps. The Military Affairs Committee has accordingly amended H.R. 11140 to provide in effect that the authorized airplane strength shall be increased from 1,800 serviceable airplanes, to 2,320, including equipment and accessories."

In citing reasons for the proposed legislation, it is stated in the report:

'The first and most potent reason for the early enactment of this bill to increase our Army air force to a figure not exceeding 4,000 planes is the fact that it is necessary for adequate national defense. All great nations now have huge airplane carriers, which are in fact floating landing fields, to enable them to carry aerial warfare to enemy shores. They also have floating seaplanes and mother ships.

Only 30 tons of explosives were dropped on London in the World War, resulting in the loss of 1,800 lives, while today planes are constructed, any one of which can drop 10 tons of explosives. This situation was well emphasized by Col. C. de F. Chandler, United States Army (retired), in an article which appeared in the November 1934 issue of the United States Air Services, where he said:

'German seaplanes of existing types now alight on the South Atlantic Ocean between Africa and South America to moor astern of a station ship (S.S. Westphalian). This vessel is an ordinary merchant type, supplied with aviation fuel and other servicing facilities. Fuel and oil are transferred to the seaplane on the water. Meager reports mention experiments with a canvas ramp astern on which the seaplane may be hauled; also trials of canvas shelters for protection during refueling operations. The military significance of this commercial "mother ship" for seaplanes appears to have been ignored. As seaplanes become larger, their ability to alight safely on the ocean increases. Acknowledging only the existing sizes of seaplanes, it is rather startling to contemplate that small inexpensive merchant ships are capable of serving as ocean supply bases for trans-oceanic bombing planes.'

Mr. Igar Sikorsky, the eminent builder of large seaplanes, informed the Federal Aviation Commission (Oct. 10, 1934) that seaplanes are now in course of design that can transport 10 tons for a nonstop flight of 2,000 miles. A single seaplane of that type - which is a prospect for the immediate future - then could drop 10 tons of bombs on any American coastal city simply by prearranging a rendezvous with a small servicing vessel at sea a thousand miles from the coast line.

These facts strongly emphasize that our Nation is no longer protected from air attacks because of the wide extent of the Atlantic and Pacific Oceans, and we must govern ourselves accordingly. Here we desire to emphasize the thought that plans of this committee contemplate only safe and sane defense for the United States of America....

It should be recalled that, after the report of the Morrow Board, Congress authorized an increase of naval aircraft from 1,000 to 2,190, but left the Army authorization at 1,800. This substantial error which must now be corrected is well emphasized in a statement from Maj. Gen. Oscar Westover, Chief of the Army Air Corps, published on March 15, 1936, which reads in part as follows:

'The dominant characteristics of military aircraft are tactical and strategical mobility and striking power. That aircraft will play an important part in any war of the future is incontestable. (Continued on Page 19).

QUESTIONS AND ANSWERS

Q. What policy has controlled the selection of locations for new Air Corps stations for tactical units, especially in the continental United States?

A. With few exceptions, the permanent Air Corps stations have been built at the sites selected during the World War for temporary aviation activities. These war-time sites were selected under the urgency which characterized most of the aviation measures of the War. So far as can be found, no written policy governed these selections. An examination of the records of that time indicates that two dominant considerations affected the choice of aviation sites; first, political pressure; and, second, good year-round climate.

No evidence can be found to indicate that any consideration was given to strategical and tactical requirements involved in an air defense of the continental United States. It is doubtful whether such an idea as an attack by air upon the continental United States was entertained at that time.

Since the land acquired during the war for aviation purposes belonged to the United States, it apparently has been largely a matter of expediency to construct the majority of the existing permanent Air Corps stations upon such land. Barksdale Field at Shreveport, La., and Hamilton Field at San Rafael, Calif., are outstanding exceptions.

The Barksdale Field site was selected by a board of officers after considerable study and the review of the report of a previous board appointed for the same purpose. It was selected to accommodate the Attack Group, at that time stationed at an unsuitable Coast Artillery station, Fort Crockett, Texas, where the size of the flying field was entirely inadequate and the terrain was unsuitable for expansion. It was only after the site at Shreveport had been selected that the War Dept. decided to build the station to house a Pursuit Group, in addition to the Attack Group.

The location of a Wing station on the southern border at Shreveport, La., serves the strategic defense of that border and, at the same time, places an important component of the GHQ Air Force in a location where it can rapidly concentrate with other Air Force units on either coast of the continental United States.

The selection of the Hamilton Field site was also made by a board of officers, pursuant to a plan of the War Department to have a station for Bombardment Aviation on the West Coast. The 7th Bombardment Group, now at Hamilton Field, was stationed at March Field until its new station was completed. Hamilton Field is located in an area of undoubted strategic importance.

As the speed of airplanes increases, the amount of warning of impending attacks decreases and, from a tactical standpoint, the location of permanent stations for air units should be such as to favor the establishment of an adequate aircraft warning system. Such a system should be of sufficient extent and density of observation stations to afford ample warning of attack to enable getting airplanes into the air before the attack opens.

This consideration and the selection of sites for future air stations in areas where attacks are most probable were written into the new "Air Base" legislation, approved by the President, August 12, 1935. Under this law, the War Department appointed a special committee to study the needs for new air stations and depots, as well as the expansion of existing facilities. It may, therefore, be expected that sites for permanent air stations which are selected in the future will conform to the policy expressed in the law above referred to, and that new air bases will be located in the most important strategic areas of the continental United States, based upon consideration of prompt and effective defense against air attacks.

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OFFICERS RETURNING FROM FOREIGN SERVICE

The following-named Air Corps officers, upon the completion of their tour of duty in the Hawaiian Department, are assigned to stations in the United States as indicated below:

To Wright Field, Dayton, Ohio: Captain Signa A. Gilkey and 1st Lieut. Russell Keillor.

To Barksdale Field, La.: 1st Lieuts. Bryant L. Boatner and Richard H. Lee, for duty with GHQ Air Force.

To Brooks Field, Texas: 1st Lieut. William J. Clinch, Jr., for duty with 12th Observation Group.

To Langley Field, Va.: 1st Lieut. John W. Egan, with Flight "A," 16th Observation Squadron; 1st Lieuts. Ford J. Lauer and Curtis E. LeMay, with 2nd Wing, GHQ Air Force.

To Selfridge Field, Mich.: 1st Lieut. John N. Stone for duty with GHQ Air Force.

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Special Orders of the War Department, recently issued, assign Colonel Henry B. Clagett, Air Corps, to duty at Selfridge Field, Mt. Clemens, Mich., to assume command of the First Pursuit Group at that station.

GRADUATION EXERCISES AT AIR CORPS TECHNICAL SCHOOL

A total of 33 officers graduated from a ten-months' course of instruction at the Air Corps Technical School, Chanute Field, Rantoul, Ill., on Tuesday morning, June 30th. General Oscar Westover, Chief of the Air Corps, flew from Washington the previous day to be present at the commencement exercises and to deliver an address to the graduating class.

Colonel Junius W. Jones, Commandant of the Technical School, who gave the introductory address, stated in part:

"We have reached the end of another scholastic year, which has been a very successful one. There have been many changes made to improve the school, and they are only the beginning of what we hope to do in the future."

In introducing General Westover, Col. Jones said: "This is the first time the Chief of the Air Corps has been present to present diplomas to a graduating class at Chanute Field. I am very thankful to the General for taking the time away from his arduous tasks to be present."

General Westover's address was, in substance, as follows:

"Although it required a special effort on my part to be present on this occasion, I am happy, indeed, that I am able to extend in person my congratulations upon the successful completion of the course of instruction at the Air Corps Technical School. This School, because of the instruction imparted here, is of vital importance to the welfare and success of the whole Air Corps.

When we live very close to an activity it is difficult for us to see it in perspective. Perhaps an illustration taken from another field of endeavor will serve to illustrate the progress made in aviation more forcibly than an example taken from our own field.

Public attention recently has been directed to the Atlantic crossings of the "Queen Mary." This wonderful vessel provides a four-day crossing of the Atlantic under conditions of comfort and luxury which can scarcely be equalled in the finest hotel on land. The cost of such a crossing for the vessel as a whole is estimated by "FORTUNE" to be $195,000. We may contrast this with a crossing of the Atlantic in the era of sailing vessels, when the crossing required from a month to six weeks, or more, and the conditions under which passengers made the trip were of the most Spartan character, with no luxuries and few, if any, comforts. On the other hand, the cost of such a crossing for the sailing vessel was a mere fraction of the $195,000 for the "Queen Mary."

Compared with the length of time ocean transportation has been under development, aviation may be said to be, at present, in its "sailing era." On the other hand, the gap between the first and the present-day airplanes is, in some respects, as wide as that between the sailing vessel and the "Queen Mary."

The ever increasing complexity of aircraft and their equipment has made the operating and maintenance problems increasingly serious. The solution of these problems in the Air Corps will be, in large part, the responsibility of you graduates during your forthcoming service.

In addition to the highly trained ground personnel required for the maintenance of military aircraft, a crew, corresponding in many respects to the crew of a complex surface vessel, will be required to operate in flight the new large Bombardment airplanes. Part of this crew will consist of enlisted men who are trained as radio operators, aircraft gunners and engineers.

An analysis of the requirements of the Air Corps for trained enlisted specialists shows that the 16,000 enlisted men now authorized should be trained approximately as follows: One-half, or 8,000 as airplane mechanics; fifteen percent, or 2,400, as radio repairmen and operators; twelve percent, or 1,900, as aircraft armorers; and the remainder divided among welders, sheet-metal workers, machinists, parachute riggers, photographic and instrument repairmen and miscellaneous.

It is estimated that there is an average of 2,400 original enlistments in the Air Corps each year. If all of these new men were given specialized training at the Technical School prior to assignment to Air Corps units, the capacity of the school would have to be quadrupled. It is readily apparent that the training of approximately 600 enlisted men annually, the maximum number that can be trained with the present facilities, does not meet the requirement of the service for trained specialists and that a large part of the required number of men must be trained in the tactical units.

Estimates for construction of a new plant for the Technical School have been based on the training of 1200 enlisted men and 50 officers annually. A recent study by the Air Corps Board shows that the Air Corps should have 30,765 enlisted men when the authorized 2320 airplanes are obtained. When that point is reached the number of specialists required will be almost double that required now. Contrasted with this requirement, it is interesting to note that during the past six years, 244 officers and 2654 enlisted men have graduated from the Air Corps Technical School.

Your course here has undoubtedly impressed upon you that the Air Corps has

found it necessary to specialize. Accordingly, this school has specialized and you will carry out into the service the benefits of the specialized knowledge you have obtained here. Efficient organization makes it undesirable, even if it were possible, to have any one man in an organization responsible for the maintenance of armament, engines, airplanes, radio, and photographic equipment. Due to the scope of these various categories of maintenance, better results are obtained by having experts who concentrate upon each of these categories.

This system has been the basis of the organization and curriculum of the Technical School, and during your course here you have had an opportunity to profit by the benefits of this system.

The organization of a school upon this basis enables the concentration of highly qualified officers of experience in each of these specialities for the purpose of imparting instructions in their specialties. Such a concentration of talent would be quite impossible to secure, even in the larger Air Corps stations. Furthermore, officers in the tactical organizations having this specialized knowledge are absorbed in the duties incident to operation and are unable to apply themselves to the task of imparting methodical, intensive instruction in the way it is possible to do in this school.

The inclusion of all these specialties in a single school affords the advantage of interchange of ideas and methods, and the co-relation of these activities from the theoretical standpoint in a way that would be quite unlikely to be attained under the stress of operation in a tactical organization. All these advantages have been clearly demonstrated during the years this school has been in operation. As each succeeding class goes out into the service, the cumulative benefits of accurate and scientific knowledge are evidenced by more efficient maintenance in the tactical units.

It is hoped that you will all feel that your education does not cease with your graduation here. The school of practical experience has ever been a valuable one, teaching its own particular lessons, which are equally valuable with those to be derived from study and practice in the classroom and laboratory. It is impossible to cover in school all the various problems which your subsequent service will present. It is hoped that you will all be ever alert to gain from your forthcoming practical experience new ideas for the improvement of the maintenance and inspection of Air Corps equipment and materials.

I know that you are all interested in the future of this school. I can assure you that I am, also, and that the War Department is very desirous of placing this school in permanent buildings. . . . . I believe the next Congress may provide for this.

In closing, I desire to congratulate all of you who are graduating, and to express my appreciation to the Commandant and faculty for their efficient and essential contribution to the knowledge you have obtained in this school."

The graduates of the Technical School are listed below, as follows:

Photographic course:

Captain William O. Eareckson, Lieuts. Earl T. MacArthur, Jr., William M. Prince.

Communications Course:

Lieuts. Louie P. Turner, Frederick A. Pillet, Edwin L. Tucker, George F. Kinzie, William E. Karnes, Fred S. Stocks, John H. Bundy, Stuart P. Wright, Minthorne W. Reed, Richard H. Wise, Joe W. Kelly, Thomas C. Darcy.

Engineering Course:

Lieuts. William T. Hefley, Eugene H. Rice, Herbert L. Grills, Oliver S. Picher, Carl R. Feldmann, George F. Schlatter, Clark N. Piper, Wiley D. Ganey, Daniel F. Callahan, Joseph F. Carroll, Jr., Hilbert F. Muenter, Air Corps; Captains Thomas D. Lane, Harrison W. Wellman, Jr., Lieuts. Roy T. Bankard, William G. Catron, John A. Hawkins, Kenneth R. Case, Lester C. Holtan, National Guard.

Shortly following the commencement exercises, General Westover took off for the return flight to Washington.

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TEXAS FLOODS PHOTOGRAPHED

Lieut. Charles F. Densford and Staff Sergeant Coy, Air Corps, stationed at Kelly Field, Texas, in a photographic mission on July 3rd, took fifty exposures of the Texas floods for Representative Bob Kleberg. They started in at New Braunfels, followed the Guadalupe River to Seguin, Gonzales, Cuero and Victoria, then to Three Rivers where the Atascosa, Frio and Nueces Rivers converge. The total flying time for the mission was three hours and twenty minutes.

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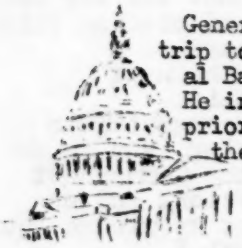
SHARP SHOOTING BY LIEUT. DENSFORD

Lieut. Charles F. Densford, of Kelly Field, recently competed in the Michigan State Pistol Matches at Detroit. The well known pistol expert won two first places, one second place and one third place. He placed second in the Michigan State Championship and won first place in aggregate of individual matches. The revolver used by Lieut. Densford in the matches was a Colt's officers' model, .38 caliber.

WASHINGTON OFFICE NOTES



General Westover on his recent trip to the West visited the National Balloon Races at Denver, Colo. He inspected all of the balloons prior to the take-off and examined the arrangements made by the Operations Officer for the race, Major William J. Flood, Air Corps. General Westover expressed himself as being very much impressed with the splendid conduct of all features pertaining to the race. He stated that the novel start by moonlight and with searchlights playing on the balloons made the spectacle an extremely entertaining one.

Upon learning of the crash and the burning of the Army entry, piloted by Captain Haynie McCormick, with 1st Lieut. John A. Tarro as aide, General Westover flew out to the reported site of the crash and found the country to be excessively rugged and the depression in which the Army balloon dropped covered with a dense growth of scrub pine. It was probably these difficult conditions that caused the drop of the Army balloon under the force of a down current of air to result disastrously.

Lieut. Colonel Harry H. Young reported for duty in the War Plans and Training Division.

Returning to duty from leaves of absence were Lieut. Colonel Vincent B. Dixon and Captain Robert V. Laughlin.

Officers who recently departed on leaves of absence were Lieut. Colonel R.M. Jones, prior to taking up his new duties at Kelly Field, Texas; Lieut. Colonel Gerald E. Brower, Majors R.C.W. Blessley, Alfred W. Marriner, and Captain Morton H. McKinnon.

On July 7th, Colonel Frederick L. Martin, Lieut. Colonel Arnold N. Krogstad, Major Lawrence P. Hickey and Captain John W. Monahan reported for temporary duty in the Office, Chief of the Air Corps.

Major Harlan W. Holden left for his new duties at the Air Corps Tactical School at Maxwell Field, Ala.

Lieut. Colonel William E. Lynd left on a cross-country flight to Maxwell Field, Ala., for conference with the Air Corps Board.

Recent visitors to the Chief's Office were Lieut. Colonel Walter H. Frank from Mitchel Field and, during the course of extended navigation flights, Major Leo H. Dawson from Selfridge Field and Captain August W. Kissner from Kelly Field.

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When General Westover was at Chanute Field on the occasion of the graduation exercises at the Air Corps Tactical School, he made a thorough tour of inspection of the post. It was reported that the highest temperature in many years made the inspection considerably discomforting, the mercury soaring around 105.

ARMY AVIATION HEROES OF THE PAST

By Pvt. A.L. Valentine, 7th Bomb. Group Hqrs.

Do you remember the Three Musketeers when they were at the heighth of their glory several years ago - Lieuts. John J. Williams, Irvin A. Woodring and William L. Cornelius? Famous throughout the Air Corps for their daring and courage, for several years these three performed before the world. In the 7th Bombardment Group, in the old 17th Pursuit Group, now redesignated Attack, and especially in the 95th Attack Squadron, their names are spoken of affectionately and sort of reverently, for they helped to form the traditions of the Air Corps. Wherever they went they were called upon to personify that branch of the military service, and at each place they left behind them glowing accounts of their daring.

On September 10, 1928, almost eight years ago, the first of the Musketeers fell from the skies. Lieut. "Johnny" Williams, leader of the three, while performing aerial acrobatics during the Air Races at Mines Field, Los Angeles, crashed to earth and was killed almost instantly. Despite their comrade's untimely death, Lieuts. Woodring and Cornelius carried on. Colonel Charles A. Lindbergh volunteered his services, and the show continued.

Even then it was written that another of their number was to die. Two weeks later in a mid-air crash with Lieut. Roger V. Williams at Rockwell Field, Lieut. Cornelius was killed while Lieut. Williams escaped with the aid of his parachute. Now there remained one Musketeer - Lieut. Woodring. He carried on alone until in April of 1930, and at that time, during maneuvers at Mather Field, he narrowly missed death when his ship became uncontrollable and he was forced to jump. He was performing in aerial combat with the late Captain H.M. Elmendorf, Squadron Commander of the 95th, zooming and diving, chasing each other through the skies for the benefit of a few thousand spectators who had come to witness the giant spectacle of the Army Air Corps Maneuvers. While his ship was falling, and Lieut. Woodring was bailing out, Lieut. Hayden P. Roberts, flying a transmitting plane a short distance away, watched Lieut. Woodring jump, drew a sketch of the field and marked the spot where pilot and ship landed. This was immediately transmitted to the ground station by means of the Westinghouse electrical invention which was being tested by the Army at that time.

A few months later, Tuesday, October 28,1930, Lieut. Woodring with Lieut. Caldwell were ordered to Vancouver, B.C., where they received the Japanese ratification of the London Naval Treaty which was to be taken to New York, transferred to the steamship LEVIATHAN and dispatched to London. While flying through Wyoming, the two messengers encountered severe snow storms. They became separated, and Lieut. Caldwell crashed. Several days later he was found. The remains of his ship were scattered over a wide area. Lieut. Woodring remained in Laramie, Wyoming, overnight and resumed his journey to New York the next morning with the precious document. It was not until he had reached his destination that he learned of Lieut. Caldwell's death. Sometime later, Lieut. Woodring was decorated with the

(Continued on Page 20).

With the close of business on June 30th, 803 names were entered on the register of the mythical Caterpillar Club, that exclusive organization of airmen and airwomen wherein life-time membership becomes automatic immediately following an emergency parachute jump.

Supplementing the above mentioned 803 jumps are 38 repeater jumps, made by various members of the Club, thus increasing to 841 the total number of emergency parachute jumps made by American flyers since July 21, 1919, when the two men who head the Caterpillar Club roster miraculously escaped via the parachute from a burning airship flying over the Chicago business district.

At the end of the calendar year 1935, there were 760 names on the register. It will, therefore, be noted that during the first six months of the present calendar year there were 43 more initiations into the Mystic Order of Caterpillars. The only member of the Order to receive his second degree this year is Major Byron E. Gates, Caterpillar No. 101, whose first initiation occurred on August 9, 1923, when he was a first lieutenant.

During the first six months of the calendar year 1935, the number of emergency parachute jumps totalled 29. No explanation can be offered for the increase in the number of jumps so far this year, except to say that accidents simply will happen.

The names added to the Caterpillar Club roster since January 1, 1936, are given below, as follows:

No.	Date		Name	Rank	Place of Jump
	1936				
761	January	11	George L. Brown	Private, Air Corps	March Field, Calif.
762	January	22	Frederick G. Huish	Flying Cadet, Air Corps	Randolph Field, Texas
763	January	24	Thomas E. Lanigan	Private, Air Corps	Near Ford Island, T.H.
764	January	24	Charles E. Fisher	2nd Lieut., Air Reserve	Near Ford Island, T.H.
765	February	7	W. A. Trembly	Flying Cadet, Air Corps	Near New Braunfels, Texas
766	February	12	Otto C. George	Captain, Air Corps	Near Stonewall, Ga.
767	February	12	Robin B. Epler	1st Lieut. Air Corps	Near Stonewall, Ga.
768	February	12	George Russell	Sergeant, Air Corps	Near Stonewall, Ga.
769	February	12	Harry McHayes	Sergeant, Air Corps	Near Stonewall, Ga.
770	February	14	Harry N. Burkhalter	2nd Lieut. Air Corps	Fulton, Arkansas
771	February	14	W. K. Durham	Private, Q.M. Corps	Near Mansfield, La.
772	February	18	W. J. Kliffel	Sergeant, Air Corps	Near Sourlake, Texas
773	February	27	George F. Rice	Lieut. (JG) U.S. Navy	Near Pensacola, Fla.
774	March	14	Edgar R. Camp	Lieut. Air Corps	Near Lawn, Pa.
775	March	17	James W. LaCompte	Mechanic U.S. Navy	10 Miles W. Point Loma, Calif.
776	March	20	Carlton F. Bond	Major, Air Corps	Nacogodoches, Texas.
777	March	21	William M. McAvoy	Civilian	Langley Field, Va.
778	March	21	John Wheatly	Civilian	Langley Field, Va.
779	March	29	Benjamin W. Chidlaw	Captain, Air Corps	Near Crestview, Fla.
780	March	29	John L. Hammack	Private, Air Corps	Near Crestview, Fla.
781	April	9	J. W. Hinton	2nd Lieut. Air Reserve	Near Coushatta, La.
782	April	9	Maurice M. Simons	2nd Lieut. Air Corps	Near St. Hedwig, Texas.
783	April	12	J. A. Philpott	Flying Cadet, Air Corps	Mather Field, Calif.
784	April	21	Walter E. Todd	Captain, Air Corps	Near San Diego, Calif.
785	April	29	Frank J. Bennett	2nd Lieut. Air Reserve	Spring Garden, Va.
786	April	30	Harlan T. McCormick	Major, Air Corps	Elizabeth, Indiana
787	May	8	Leon E. Sharon	Captain, Air Corps	Kewanee, Miss.
788	May	8	Malcolm F. Lindsey	Major, Infantry	Kewanee, Miss.
789	May	11	James L. Bledsoe	Flying Cadet, Air Corps	Near Hondo, Texas.
790	May	12	Nelson R. Turner	Private, Air Corps	Near Penonome, Panama
791	May	12	William A. Knight	Staff Sgt. Air Corps	Near Penonome, Panama
792	May	12	Donald W. Benner	Captain, Air Corps	Near Penonome, Panama
793	May	23	J. L. Malone	Civilian Test Pilot	Dayton, Ohio
794	May	27	John E. Albert	1st Lieut. Air Reserve	Sycamore, Ohio
795	May	27	Will W. McConnell	1st Lieut. Air Reserve	Sycamore, Ohio
796	May	27	Edgar L. Carlisle	1st Lt. Pa. Nat'l Guard	Brookville, Pa.
797	May	19	Douglas W. Smith	Flying Cadet, Air Corps	Near March Field, Calif.

No.	Date		Name	Rank	Place of Jump
798	May	27	Claude L. Craven	Lt. Pa. Nat'l Guard	Brookville, Pa.
799	June	4	Charles E. Robbins	Private, Air Corps	40 miles NW Medford, Ore.
101	June	4	*Byron E. Gates	Major, Air Corps	40 miles NW Medford, Ore.
800	June	6	Percy G. Smith	Staff Sergeant, Air Corps	Syosset, L.I., New York
801	June	6	Dalene Bailey	Flying Cadet, Air Corps	Syosset, L.I., New York
802	June	7	William B. Wright	Lieut. Col. Air Corps	Town Hill, Md.
803	June	22	Charles Edward Robertson	Lieut. (JG) U.S. Navy	Pensacola, Gla.

*Second emergency parachute jump.

In the various reports submitted by Caterpillar Club members, reciting their experience while undergoing initiation, most of them stated that their feelings and reactions were normal throughout the incident.

Captain Chidlaw asserted that, after he felt assured that his mechanic, whom he had ordered to jump, had gone about that business in approved style, his feelings were more of annoyance that such an event had to happen rather than any feelings of fear or apprehension either because of the fire or because of the necessity for jumping.

When Lieut. Hinton prepared to jump from his airplane due to the overheating of the engine and there being no suitable place on which to land, his first attempt to dive overboard was frustrated when his feet slipped in the oil which had accumulated in the cockpit. He then grabbed both sides of the door of his Pursuit ship, put his left foot on the seat, the other foot against the instrument panel, and dived out through the door. After completely clearing the aircraft, he reached down and pulled the rip cord. "It didn't come out the first time," he said. "All this time I had no sensation of falling. The second time I pulled the rip cord I was very much surprised at how quickly the parachute opened. The ground did not appear to be coming up fast, but I saw that I was drifting backwards and that I was going to land in the top of some tall pine trees. I then slipped the chute so that I could land in an open field off to one side. I was surprised to see how easily the parachute could be slipped."

Flying Cadet J.A. Phillpot "fell into" a Caterpillar Club membership during the course of record bombing at Mather Field, Calif. Seated in a B-12 Bomber and trying to observe the flight of a bomb - there being no window for observation in this ship and observation has to be made by leaning out through the bomb bay - the plane hit a slight bump, causing him to be thrown off his balance. With a scoreboard in one hand and a microphone in the other, he was unable to catch himself and he started earthward slightly behind the released bomb. The embarrassed observer yanked the rip cord and afterwards stated that, while he was very much surprised, he felt no ill effects at any time.

Flying over Elizabeth, Indiana, at an altitude of 2200 feet, the breaking of the propeller caused his Pursuit ship to vibrate so violently that Major McCormick was partially stunned when the windshield struck him on the head. When he recovered sufficiently, he cut the switches and got the airplane under control at approximately 1,000 feet altitude. Despite the fact that the switches were cut, the engine did not stop, due no doubt to the "ground" being pulled loose because of the violent vibration. Fragments of the disintegrating engine and ring cowling were flying in all directions. Opening the door on the left side of the fuselage, Major McCormick attempted to crawl out, reaching for the flying wire to get sufficiently far from the fuselage to clear the tail surfaces. However, he either slipped or the ship gave a sudden lurch which threw him half way out of the right side of the fuselage. Realizing that he was getting quite low to the ground and that he did not have time again to get into the cockpit and level off the ship, he shoved himself as far down to the right as he could, and left the ship headfirst. His shoulder struck the tip of the stabilizer, but not sufficiently hard to injure him. The parachute opened satisfactorily, but the risers caught him around the neck and choked off his wind. His head imprisoned between the risers, he was forced to look upward until within approximately 300 feet from the ground when, after a great effort, he succeeded in extricating his head from the twisted risers. By spilling the chute he was able to avoid a heavily wooded section and landed safely in a small clearing.

Following the breaking of the oil line in his Attack plane, when the motor froze and the front cylinder let go, causing a great cloud of white smoke, oil, etc., to issue forth, Captain Leon E. Sharon, flying at an altitude of about 2500 feet, saw no place where he could reasonably expect to get away with a landing. He informed his passenger, Major Malcolm F. Lindsey, Infantry, to jump.

Major Lindsey had some very trying moments before he finally cleared the plane. Unfastening his safety belt and starting to climb out of the cockpit, the belt caught on the parachute, and some time was lost in getting it loose. As he again attempted to crawl over the side of the cockpit, the parachute caught on the side and another delay was caused. After this delay he crawled down the side of the plane, hung by the step with his left hand, caught hold of the rip cord ring with his right and then let go. Knowing that the plane was wired for radio, Major Lindsey thought it best to climb down under the plane so as to clear these wires. He states that his feelings and reactions during and immediately after the jump were few, as the parachute opened almost instantly. He recalls wondering whether the parachute would open, but was snapped up so short and quickly by the parachute that his jumping and sudden stop seemed almost coincident.

Captain Sharon stated that it all happened so quickly, the parachute opening instantly, that

he had no time for anything but to wonder whether he was going to miss the trees immediately under him on land in a small cotton patch. A current of wind came to his rescue and swung him over into a soft plowed field. His chute caught in the edge of the trees. He was greatly concerned about Major Lindsey and located him half an hour later. Their feelings of relief were mutual.

Fate was exceedingly kind to Sergeant Percy G. Smith, who joined the Caterpillar Club without going through the necessary formality of yanking the rip cord of his parachute. Sitting in the navigator's compartment of a bombing plane, he was ordered by the pilot, Flying Cadet Delene Bailey, to "bail out" when the left engine went dead, causing the plane to go out of control in a flat spin.

Forcing himself out of the cockpit and going overboard, Sergeant Smith was knocked unconscious when he struck the left aileron. He does not remember how long he was unconscious, but when he came to the parachute was open and he was about 6,000 feet from the ground, heading for it in an easy descent. Because of previous experience in practice parachute jumps, his feelings and reactions were normal. To his great surprise he found that the parachute rip cord handle was still in its pocket. The rip cord housing was broken and was evidently pulled apart when he hit the wing, causing the parachute to open.

Cadet Bailey stayed with the plane in a vain attempt to regain control until it was down to about 2,000 feet, and then made his exit via parachute.

In his official report on his parachute jump from an A-12 airplane, piloted by the late 1st Lieut. Lawrence C. Westley, Sergeant William Kliffel very vividly gives his impressions while undergoing initiation into the Caterpillar Club. A knock had developed in the engine, and while they were over a wooded terrain the knock reached a critical point of detonation. The vibration of the ship was extreme.

The plane was losing altitude and the pilot gestured to Sergeant Kliffel to jump.

"Fear or nervousness was undoubtedly present for some time before the jump," Sergeant Kliffel stated. "I noted a dryness in the mouth. I also recall a burning sensation in the chest when I first definitely knew that I was expected to bail out. It seemed like a cold-blooded proposition. I dreaded it. I had a fear of being struck by the tail group, particularly the stabilizer. On previous flights I had often noted its unfavorable position in reference to a man attempting to clear himself. A propelling thrust would be needed to effect satisfactory clearance. When our difficulty first made itself known, I recalled a conversation which had taken place some time before, between myself and others, in which it was decided that clearance could be effected with safety if the jumper mounted the lower stirrup, fell backward in an arc of which the foot was the center, and thrusting himself away from the fuselage with the strength of his arms and shoulders. This method, however, was closed to me by the press of the emergency.

At this time I was under the impression that the pilot too would come. I had a sense of gratitude for the break he was giving me in holding the ship, but I wanted him to get out. I felt that he was taking too great a risk for someone else. I knew I could get out somehow without his help. But he didn't move. All this time (possibly two or three seconds) I was working myself over the side. I wanted to give him as good a break as he was giving me. I hurried. I knocked my goggles off. They were banging on my neck. My reasoning power at this point was uncanny and far superior to my normal average both in speed and accuracy. I was practically ready - the wind tore me loose.

My first sensation was one of spinning head down. This may have been an illusion. But I couldn't focus my eyes on anything. There was nothing there except streaks. I'd seen jumpers tumbling end over end. I didn't think I was doing that. I wondered if I'd foul my chute. I wondered who packed it. I was definitely not afraid at this time. I felt like a man who had taken a definite step in an unknown direction and waited for the results in some curiosity. I knew I should wait for an instant before pulling the rip cord. I reached for it and couldn't readily locate it. I wondered if I could see my hand if I held it before my eyes. I could. The ripcord handle was in it. The cable was dangling. I felt silly for some unknown reason, as though I hadn't done it properly. I was becoming interested again. I wondered if I'd make it. I could feel a positive friction under my seat. It made me feel good. I knew the chute was working - that it was pulling out. I wished I could see what was happening. I could feel a tugging, and it was gentle. This wasn't bad. I had a sensation of bouncing as though I were on a rubber band. I felt a sharp pain between the legs. That didn't matter either. My reasoning power was gone. Things were happening too fast. I could not think them out. They were just pictures, but very, very clear. I saw the earth once in a while. It looked like I was still spinning. My feet were down now, though. It seemed like the whole parachute was spinning. I was able to reason this out. I decided the canopy was steady but that the shroud lines were swinging in a circle with me. I saw some buildings in the distance. I remembered the airplane. I wanted to see it. I wondered about the pilot. I wondered if he made it. I saw the airplane. I could see the pilot now. His head and shoulders were above the outline of the ship. Things were getting steady now. The pilot was standing up.

I was dropping in the woods. I was suddenly afraid. I was falling too fast. The trees were reaching for me. I could see the black limbs. I grabbed my shroud lines and pulled them. One tree was almost in my way. I pulled harder. I fell faster. I missed the tree. I saw it pass. I was falling backward. I looked and saw another one coming. I couldn't miss it. I crashed. I fell through the limbs. I landed on the ground. I was flat on my back. My foot hurt and I wondered if it was broke. I was afraid to find out. Everything was suddenly very still. It was a relief. I remembered that there never had been any noise. It was something in my head. At this

period, either during or after my landing, I have a distinct recollection of hearing the airplane crash to the ground, but I can't place it in proper sequence. I got up. My foot hurt. I walked away. Something stopped me - my harness. I took it off. My chute was draped in the tree. I left it as a landmark. I called Westley. I wondered if he made it. I could think better now. I was out of the woods and looked all around. I saw something white in the west. I thought it was an oil tank. I watched it and it seemed to move. It was a long ways off. It was a parachute. It was Westley. He was hurt, otherwise he'd be up and the chute would be collapsed.

I ran. I was in a bog. It was deep. The water was cold. My foot hurt worse. I could barely breathe. I saw a man on a horse. He stopped by the parachute. Then some more men on foot, then another man on a horse. One horse went away with two men on its back. I shouted for them to collapse the chute. They couldn't hear me. They couldn't even see me. I was all in. Now they were spilling the chute. Now they saw me. They were putting me on a horse. I couldn't mount. They told me the pilot was dead."

Since the foregoing compilation of the Caterpillar Club roster was prepared, a newspaper account of the initiation of two more members on the last day of the Fiscal Year, June 30th, has raised the total number of names on the roster to 805, and the total number of jumps to 843. While flying near Bocas del Toro, Republic of Panama, Lieut. Isaac W. Ott and Private John Komdat, Air Corps, took to their chutes and escaped from a bombing plane which caught fire following the breaking of a connecting rod in one of the engines.

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TC-13 AIRSHIP ENCOUNTERS DIFFICULTIES

On the return flight to Moffett Field, Calif. following a visit to March Field recently, the Army Airship TC-13 ripped its upper fin during stormy weather off Point Conception in the Pacific Ocean. The airship flew back to March Field, waited until the storm abated and then flew the course successfully to Moffett Field. The trip was part of its reglar seacoast patrol.

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When the new class at Randolph Field reported to the Commendant on June 29th, five young men from Southern California were among the assembled embryo pilots. One, Private Vernon Plane, was mentioned in a previous issue of the News Letter. The four civilians in the group were Guy L. Hudson, Los Angeles; George L. Robinson, Corona; Frederick L. Moore, Fillmore, and Paul L. Laurence from Palms. It is hoped, says the News Letter Correspondent, that these five young men will all live up to the good records made by their Southern California predecessors at the West Point of the Air.

CHANGES IN RANK AMONG KELLY FIELD OFFICERS

There were many upsets at Kelly Field, Texas, as a result of the new legislation recently enacted affecting temporary rank. Six field officers continuing in their temporary grade are Majors R.N. Ott, L.N. Eller, C.C. Nutt, James A. Healy, R.D. Knapp and M.R. Woodward. The News Letter Correspondent states that several of the junior officers were particularly affected through the loss of their captaincies, in view of the fact that the loss in grade came just at the time when they would begin to get pay for the grade.

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CAPTAIN ANDERSON NOSES OVER IN LANDING

Captain Orvil A. Anderson, Air Corps, was the victim of a minor accident at Kelly Field on the morning of June 28th. The accident occurred as he was coming down through heavy clouds after making the daily weather flight. His O-25A Observation plane developed engine trouble as it came out of the clouds at 400 feet altitude. Having very little space to maneuver in, he was forced to land in an adjacent corn field. As an additional complication, it had just rained considerably, and the plane immediately nosed up, broke its landing gear, lower wings, and bent the propeller. Captain Anderson escaped injury and his meteorological instruments were not damaged.

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MISHAPS DO NOT COME SINGLY

Captain E. T. Selzer, Air Corps, flew to the Air Corps Technical School, Chanute Field, Ill., recently in the Kelly Field C-24 Transport plane for the purpose of returning graduated mechanics to the Training Center. During the course of his return flight to Kelly Field his motor started throwing excess oil and he was forced down at Little Rock, Arkansas. A Transport plane from the San Antonio Air Depot, Duncan Field, was dispatched to Little Rock and the enlisted men were brought to Kelly Field. Captain Selzor's troubles were not over. Upon effecting temporary repairs to his motor, he took off for Kelly Field, but upon reaching the vicinity of Austin, Texas, he encountered heavy weather conditions which forced him to land there. Due to the soft condition of the landing field, the airplane nosed up. There was very little damage, however, and the plane will soon be flown home.

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GUATEMALAN OFFICER DIES IN CRASH

Kelly Field heard with deep regret of the accident which occurred to Captain Nicolas de Leon, Jr., who graduated from the Advanced Flying School in 1933 and was killed in an airplane crash in Guatemala City, Guatemala, recently. Capt. de Leon was an officer in the Guatamalan Air Force. He attended the Primary School at Randolph Field and was transferred to Kelly Field in July, 1933. He is survived by his widow and son, George de Leon.

Many authorities believe that aircraft will play the most important part in future wars. President Coolidge has been quoted as saying that "Our National defense must be supplemented, if not dominated, by aviation." General Foch has said that the potentialities of an air attack are so great that it may impress a people to the extent of forcing their government to lay down its arms."

The above opinions were expressed at a time when the potential effectiveness of aviation was much less than it is today. Since these opinions were promulgated, aviation has demonstrated its ability to cross the oceans, to circumscribe the globe, and to make countless flights irrespective of weather conditions.

Flights of several hours' duration have been made through thick fog without preventing the attainment of the objective. Airplanes have been landed in dense fog. Aerial armadas have been maneuvered over vast stretches of country with practically no losses. Continuous control over all components of these forces has been exercised from the air through the use of radio and telephone. The speeds of airplanes have increased 30 percent, their carrying power has been about duplicated and their operating reliability has been improved to such an extent that the fear of failure to reach the objective, due to mechanical failure, has been practically removed. Of course, such remarkable progress during the past few years should not lead one to believe that the ultimate limit of advance has been reached. Research and technical development now in progress indicate that the advance in the last 10 years is only one step in a long series of progressive steps. Conservative military aviators are loathe to make definite statements with respect to their conception of the potentialities of military aircraft of the future for fear that their conservative beliefs will be considered nothing but dreams.

That the oceans are not insuperable barriers in the paths of aviation is now conceded by all. The next generation must reconcile itself to the fact that large fleets of airplanes can be projected from continent to continent as easily as large fleets of naval vessels can be moved today, and with a speed enabling such movement to be effected in the hours of daylight. America will then fear the destructive power of these in the same way as Europe fears them today. You will recall that during the World War, Paris became panic-stricken over the fact that a gun had been created which could throw a shell into that city from within the German lines. The aviation of the future can, figuratively, throw a shell across the Atlantic Ocean and direct that shell from a platform immediately above the objective.

Large armies require the movement during mobilization of large masses of people along narrow traffic lines. The transportation of their impedimenta and supplies requires the maintenance of railroads, roads and bridges. The air force is able to keep all the movements of such an army under observation, both by day and by night, thus preventing surprise concentrations of large armies as was formerly the case. In fact, such armies cannot be operated in the face of the terrific machine gun and bombing attacks of a powerful enemy aviation of the future. The tactics of future wars will develop along the lines of covering by air force operation the seizure of strong strategical positions by extremely mobile mechanized ground forces.

Our national policies contemplate defense of the United States against any foreign aggression. Nowhere do we find a policy of aggression. It is not contemplated that we take the offensive against any nation or for any reason except to resist an invasion of our territory.

With this basic national and military policy, we can readily deduce what should be the air-defense policy of the United States. That policy should be so to organize, train, and equip military aviation in time of peace as to permit it in time of war to be employed immediately in defense of our territory. Every offensive weapon or characteristic of modern military aviation should, in case of an invasion, be immediately brought to bear to resist such invasion.

As a part of the Army, the function of the Air Corps is to further the mission of the Army in protecting our coast lines and continentalfrontier, in forming a covering force in case of a major war, in holding and protecting our overseas possessions, and in protecting our cities and industrial areas from demoralizing and destructive air raids. * * * '

As most convincing evidence of the present deplorable condition of the Army Air Corps we now quote from testimony given by Hon. Harry H. Woodring, The Assistant Secretary of War, before the subcommittee of the House Committee on Appropriations, on January 16, 1926:

'Mr. Bolton. How many serviceable airplanes has the Army at this time?

Mr. Woodring. Approximately 1,060 airplanes were in the hands of the Air Corps on December 2, 1935, of which only about 200 are of the most modern type. * * *

Mr. Bolton. Allowing for wash-outs, deliveries, and so forth, what will be the number of airplanes in the Air Corps as of July 1 of this year?

Mr. Woodring. The figures furnished my office indicate that the Army Air Corps will have approximately 777 airplanes in its possession on July 1, 1936.'

When asked about the effect of the appropriation of $22,330,000 for the fiscal year 1936, Mr. Woodring said:

'A continuation of an appropriation of the above size will never permit the Army Air Corps to reach the desired strength as it will only take care of approximate yearly losses.'

We are reliably informed that foreign nations have from 5,000 to 10,000 planes for military purposes. As to the utter inadequacy of America's Air Service we need but recall the testimony of General Westover before the Appropriations Committee in December 1935 when he informed the committee that it is estimated that not more than 736 airplanes now on order will be delivered during the fiscal years 1936 and 1937. During this time there will be estimated losses of 981 airplanes. The net result of these factors, therefore, will leave the Air Corps on

June 30, 1937, with an estimated number of 779 project airplanes, with about 529 planes classed as obsolete on account of having passed the 5-year age limit. Such of the 529 as are suitable for retention will have to be continued in use in order to permit necessary flying by Air Corps personnel. The number and type of airplanes now available in our foreign departments makes the air defense of these possessions almost impotent, and the same lack of airplanes is greatly handicapping the ground force in the training for their part of the defense.

We get only 565 planes under the War Department appropriation bill which passed the House last month.

We are now nearly 10 years behind in the development of the Army Air Corps. The following is a list of airplanes on order or obtained during the last six years.

	Planes
1930	565
1931	364
1932	285
1933	118
1934	222
1935	401

It has been reliably estimated that we must have 800 planes per year if we are to increase the present strength of our air force. The general headquarters air force for adequate self-defense must have a minimum of 980 serviceable airplanes able to take the air at any time. In spite of this fact the maximum number yet supplied to the general headquarters air force is 383 planes. When the recent maneuvers took place in Florida, General Andrews was able to take the air with only 162 serviceable planes.

Scope of Proposed Legislation

The Baker Board and Howell Commission recommended that Congress enact legislation to enable the United States of America to bring its Army Air Corps to 2,320 serviceable planes. Since these reports great strides have been made in the development of aviation, and today international unrest and disturbance exist again in foreign lands.

It is the opinion of the committee that further neglect in the development of Army aviation is nothing but false economy. While foreign nations are making available thousands of planes for attack and aggression it is our patriotic duty to develop our own air force for adequate defense.

The enactment of this legislation is essential to achieve a full realization of the words of counsel uttered by our first President, George Washington, when he said, 'We should maintain a respectable defensive posture.' It is now well recognized that air bases have the same relation to air power that naval bases have to naval power. In other words, an air force, in order to be efficient must be ready to operate, and it must have available bases from which it can operate.

For the United States of America the development of air power is purely a weapon of defense but such development as proposed herein is necessary for adequate defense.

In the matter of national defense we frequently fail to recognize the relative protection afforded by an adequate Navy. We must remember that the hostile fleet is the main objective of the home fleet and that the location of the home fleet therefore depends largely on the action of the enemy. Since our fleet must be free to meet the enemy fleet we cannot predict what portion of our coast will be protected by our Navy or how long such protection may last. As a result of this important factor we must fully realize the necessity of an adequate air force in the maintenance of an effective national defense. The committee unanimously urges the enactment of this law so that work thereon may begin at the earliest possible date. The best service that we can render our constituents, our States, and the Nation is to provide now for rational Air Corps development so that we may carry on without the loss of a single life on account of inadequate preparation."

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Army Aviation Heroes of the Past
(Continued from Page 14)

Distinguished Flying Cross by Major General Malin Craig.

Three years ago last January 20th, the last remaining member of The Three Musketeers, Lieut. Irvin A. Woodring, met his death while testing an Attack ship. On January 23rd, he was buried at Arlington National Cemetery. The entire staff of officers on duty in the Office of the Chief of the Air Corps attended. Well might some of the Musketeers' old friends repeat with feeling what Lieut. Woodring said upon the death of Lieut. Cornelius, the second Musketeer to die: "I don't think of my three closest friends being killed. I've outgrown that idea. Rather I regard them as having gone on a long cross-country, and that sometime they will come back."

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EXTENDED FLIGHTS BY 20TH PURSUIT GROUP

Several extended cross-country flights in formation were performed by the 20th Pursuit Group squadrons during the month of June for the purpose of unit navigation training. The 55th Pursuit Squadron, commanded by Major A.F. Herold, sent a flight of 14 planes to Little Falls, Minn., on June 19th, the return to Barksdale Field being accomplished on the afternoon of June 21st. Twelve pilots of the 79th Squadron, under Captain Carlton F. Bond, flew to Denver, Colo., on June 27th, and made the trip both ways within the space of three days. A flight of twelve planes of the 77th Squadron, in command of Major Oliver P. Gothlin, took off for Wright Field, Dayton, Ohio, on June 28th, and returned to Barksdale Field on the afternoon of the following day. All of the above flights included stops at various fields familiar to those participating.

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